

Systematic literature review: DOGBL in enhancing EFL students' motivation

Ari Muhammad Syifa, Lilla Musyahda, David Segoh

Department of Linguistics, Faculty of Humanities, Airlangga University, Surabaya, Indonesia

Article Info

Article history:

Received Jul 31, 2023

Revised Oct 8, 2023

Accepted Oct 23, 2023

Keywords:

English as a foreign language
Game-based learning
Gamification
PRISMA diagram
Self-determination theory
Systematic literature review
Student motivation

ABSTRACT

This systematic literature review (SLR) aimed to investigate the potential of digital online game-based learning (DOGBL) to enhance motivation in English as a foreign language (EFL). Online gaming has grown in popularity among students, opening up the possibility of using games as powerful instructional resources. Academic achievement depends on motivation, and this study, led by self-determination theory (SDT), explored how external rules, like rewards and recognition, could increase motivation in EFL utilizing DOGBL. The study used the SLR method, examining databases and choosing articles based on predetermined criteria. The chosen publications were examined in-depth, and a preferred reporting items for systematic reviews and meta-analyses (PRISMA) diagram was employed for analysis. For results, DOGBL could enhance teaching EFL by providing flexible and interesting learning environments. Key elements in motivating in DOGBL included game design, personalization, social engagement, curricular integration, and instructor assistance. As a promising method to improve EFL instruction, game-based learning, especially DOGBL, saw considerable developments between 2018 and 2023. Thus, these groundbreaking techniques transformed the way people learn English vocabulary and provided a fun and engaging way to learn the language. For educators and students, the potential for DOGBL to change EFL education is still exciting as technology develops.

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Corresponding Author:

Ari Muhammad Syifa
Department of Linguistics, Faculty of Humanities, Airlangga University
Surabaya, Indonesia
Email: ari.muhammad.syifa-2022@fib.unair.ac.id

1. INTRODUCTION

In contemporary times, online gaming has become a pervasive trend among students [1]–[3]. This phenomenon presents an opportunity to leverage online games as an effective pedagogical tool for enhancing English acquisition among English as a foreign language (EFL) or English as a second language (ESL) students [4]. For instance, the use of online educational games is effective in teaching vocabulary, with students remembering a greater number of words accurately compared to traditional methods [5]. Moreover, motivation plays a pivotal role in the learning process and online games have shown promise in increasing student motivation and engagement in academic content [6], [7]. Additionally, the appeal of competitiveness, the thrill of a task, social interaction chances, thrilling moments, relaxation and the desire to avoid stress are all motivations for playing online games [8], [9]. Therefore, the purpose of this study is to clarify how these motivational elements in online gaming could act as a promising catalyst for raising EFL students' academic accomplishment levels.

Furthermore, motivation is a fundamental component of academic success [10], [11]. However, students lacking motivation may neglect learning activities, resulting in diminished effort and performance when assessments are perceived as inconsequential [12]. Elliot *et al.*, [12] underscore the significance of an individual's desire to enhance cognitive abilities as a significant motivator. Additionally, Dörnyei and Ushioda assert that motivation influences an individual's willingness to learn and sustain effort toward desired outcomes [13]. Therefore, understanding and enhancing student motivation is crucial in teaching EFL.

Teaching English as a foreign language (TEFL) differs from ESL [9]. TEFL focuses on English instruction in non-English-speaking environments [14], [15]. Self-determination theory (SDT) identifies two aspects of learning motivation in the context of EFL: intrinsic and extrinsic motivation. Intrinsic motivation arises from the inherent satisfaction of learning, while extrinsic motivation is driven by external factors such as rewards or recognition [16]. To create a stimulating learning environment for TEFL students using digital online game-based learning (DOGBL), motivation is crucial.

DOGBL can be incorporated into existing curricula to create motivating and encouraging learning environments that encourage students to advance their language skills and meet learning objectives [17]. In the context of TEFL employing DOGBL, this study aims to understand better how external regulation such as rewards and praise can increase students' motivation. It attempts to provide light on the theoretical foundations of TEFL within the SDT taxonomy, the function of games in language acquisition and prior research that informs current research. Additionally, DOGBL uses online games connected to the internet to impart EFL subjects while including both oral and written communication. This study aims to assess how well DOGBL increases students' motivation to learn EFL. The review is influenced by earlier studies on game-based learning, motivation in language acquisition and the possible advantages of integrating digital technology into education.

While previous studies on game-based learning and language acquisition were done by Vnucko and Klimova [18], Pinto *et al.* [19] and Acquah and Katz [1] with a specific level of education, however, the current study stands out since it focuses on increasing students' willingness to learn EFL for each different level education. Furthermore, the use of internet-based games is emphasized in the present study. While the investigation conducted by the previous studies shared similarities with the current study in terms of methodology and focus, there are differences in the research objectives and participant characteristics. For instance, Vnucko and Klimova synthesize existing knowledge on digital game-based vocabulary learning (DGBVL) could be more effective than conventional teaching methods in an English classroom [18]. Pinto *et al.* [19] demonstrated that virtual reality technologies, in combination with gaming strategies, have the potential to enhance foreign language learning. Lastly, Acquah and Katz [1] investigated the effectiveness of digital games for second language learning among 6-18-year-old participants between 2014 to 2018 indicating that DLGs are an effective tool for language learning. Nonetheless, the current SLR study can provide valuable insights into enhancing students' motivation to learn EFL through game-based learning, filling gaps in previous research.

2. RESEARCH METHOD

To address the research inquiries, the study utilized a research design known as a systematic literature review. As cited by Alsowat [20], a high-quality systematic review takes adequate measures to minimize potential sources of error and bias. In addition, the systematic review is guided by a clearly defined protocol [21], [22]. It outlines its objectives, concepts and procedures beforehand, to synthesize the existing research and draw reliable conclusions [21], [22]. Therefore, there are several steps in composing SLR:

2.1. The strategy of systematic map studies

The study databases employed in this study are Science Direct, Eric, Springer Link and Google Scholar. In addition, the keyword search terms are game-based learning, EFL, learning motivation and student motivation. In searching articles, this study will use commas (,) to separate each keyword. After searching the related studies with the keywords, they will be categorized according to several criteria. These criteria inclusion and exclusion play an important role in composing SLR methodology [23].

2.2. Inclusion and exclusion criteria

After implementing the initial search strategy, studies eligible for inclusion in the keyword map were determined based on the following inclusion and exclusion criteria. Inclusion criteria included studies that could be retrieved. Meanwhile, the exclusion criteria are to remove studies that do not meet the criteria. Each of the two has a different number of criteria. By using clear inclusion criteria, systematic review can ensure that the included studies have high relevance to the research question. On the other hand, by using

appropriate exclusion criteria, systematic review can ensure that only high-quality and relevant studies are included in their analysis.

2.2.1. Inclusion criteria

A systematic review's inclusion criteria are traits or prerequisites that determine which studies get to be included. They are the study population, the kind of intervention, the study design and the outcomes that are measured are examples of inclusion criteria. The inclusion criteria aid in guaranteeing that the chosen studies are pertinent to the research objectives posed in the systematic review [24]. Although in the process of collecting the studies following these criteria, several studies will be removed if there are no specific traits wanted. Thus, below is the list of inclusion criteria for this SLR.

- a) Studies focused on game-based learning.
- b) Studies focused on learning motivation.
- c) Studies focused on EFL or ESL.
- d) Studies were articles published between 2018 and 2023.
- e) Studies published in peer-reviewed journal publications.
- f) Studies conducted in any country and with any age group of students.
- g) Studies covered any of these educational settings, such as public schools or universities.

2.2.2. Exclusion criteria

Exclusion criteria are criteria used in the study selection process in a systematic review. These criteria are used to determine which studies will be included in the systematic review and which studies will be excluded. Exclusion criteria may include study characteristics such as type of study design, study population, or type of intervention studied. These exclusion criteria help to exclude studies included in the systematic review that are relevant to the aim of the systematic review [24]. The following is the list of exclusion criteria for this SLR.

- a) Studies did not focus on GBL learning.
- b) Studies did not focus on EFL/ESL.
- c) Studies did not involve students as participants.
- d) Studies published before 2018 and 2023.
- e) Studies were not published in peer-reviewed journals publications.

2.3. In-depth review studies

An in-depth review, also known as a full-text review, is a crucial stage in the systematic literature review (SLR) process [25]. During this stage, this SLR conducts a thorough and meticulous reading of the complete text of the studies. These studies are pertained to the research topic under investigation. Typically, the in-depth review stage is conducted after the screening and article selection stages. As a result, the researcher has identified articles that are deemed pertinent based on established inclusion and exclusion criteria.

2.4. Inclusion studies in systematic map review

In the context of systematic reviews, it is common practice to visually depict the study selection process using a PRISMA (preferred reporting items for systematic reviews and meta-analyses) diagram [25]. By offering a visual overview of the selection process, PRISMA diagrams aid in establishing the credibility and transparency of systematic reviews. Moreover, there are some steps in the PRISMA diagram such as identification, screening, eligibility and inclusion or studies included; i) identification is the number of articles identified from various sources; ii) screening is the second step that states the process for selecting studies; iii) eligibility refers to the stage where the articles identified during the initial search are assessed to determine whether they meet the inclusion criteria or not; and vi) the inclusion or studies included stage. Thus, Figure 1 is the PRISMA diagram of this study.

Figure 1 show the first step involves identifying keywords in online journals to identify articles to include or exclude, followed by screening the total number of articles that match the keywords entered. The total of studies after these stages is 12,615. The next stage is Eligibility, which focuses on the articles' titles and abstracts and studies passed from this stage 89 studies. The last step entails the author carefully reviewing the selected articles based on the specific criteria relevant to this current study and getting 28 studies to discuss to answer the research questions. Thus, the 28 studies become in-depth review studies to support the results of this study.

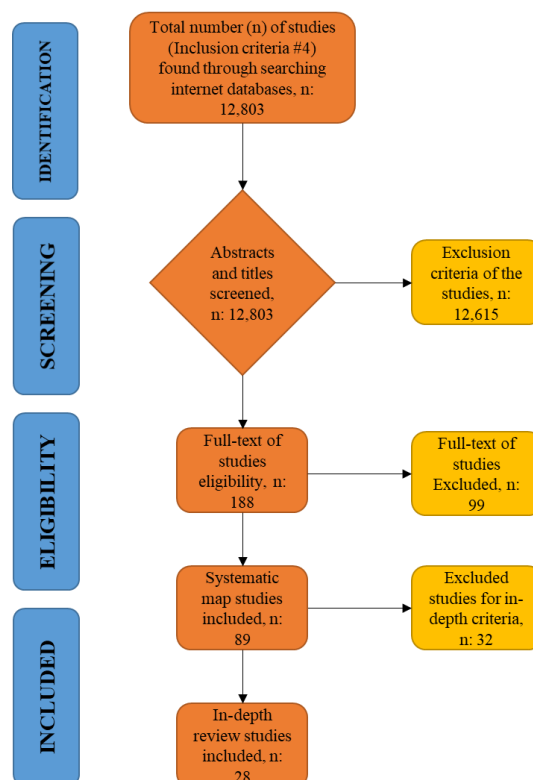


Figure 1. PRISMA diagram

3. RESULTS AND DISCUSSION

3.1. Numerous combinations are done with game-based learning between 2018 and 2023

In recent years, there has been a growing popularity of game-based learning, which has led to the exploration of various combinations between 2018 and 2023 aimed at increasing its effectiveness. These combinations encompass the use of virtual and augmented reality technologies to create immersive learning experiences that simulate real-world scenarios [26]–[29] social learning that involves collaborative learning activities such as multiplayer games or group discussions to enhance engagement and promote knowledge sharing [30]–[32] adaptive learning, which offers personalized learning experiences that cater to individual learners' needs through game-based learning, mobile learning, which utilizes games designed for mobile devices to provide learners with convenient and accessible learning experiences, and simulation-based learning, which employs simulation games to teach complex concepts and skills in a safe and controlled environment [28], [33]–[35].

Furthermore, game-based learning has demonstrated its efficacy as a valuable technique for acquiring English vocabulary [36]–[38]. Various game-based learning modalities can be utilized, such as word games incorporating different game types like crossword puzzles, word searches and Scrabble-like games, to aid learners in practicing and memorizing vocabulary words in an interactive and pleasurable manner [39]. By asking students to match terms with definitions or utilize words in context to support their meanings and usage, vocabulary tests can be difficult for students [40]. Furthermore, gamified flashcards can include game components like badges, points and progress tracking to make learning more interesting and encouraging [17], [19], [41], [42]. Conversely, interactive stories allow students to choose their path and make decisions, exposing them to new terminology and giving them context for its usage and meaning [32], [43], [44]. Finally, vocabulary acquisition can be made easier and more enjoyable for learners by using language learning apps created for mobile devices, which commonly include game-like elements like levels, awards and progress monitoring [18], [45]. Thus, game-based learning, like DOGBL, offers an effective way to acquire English vocabulary by making the process more engaging, enjoyable and participative.

To excite and motivate EFL students in their English language learning journey, a novel strategy known as DOGBL has been thoroughly researched. The only prerequisite for DOGBL, a GBL variation, is an internet connection. Through a variety of game-based learning techniques, including social learning [32], adaptive learning, mobile learning [35] and simulation-based learning [46], the effectiveness of DOGBL was thoroughly evaluated between 2018 and 2023. There are many ways to improve English vocabulary

acquisition, with game-based learning emerging as one of the most effective [37], [40]. Numerous game-based learning strategies, including word games [18] vocabulary tests [41], gamified flashcards [19], [47] interactive stories, and language learning apps, are effective ways to increase vocabulary learning enjoyment, interaction and engagement [45], [49]–[50]. According to these findings, DOGBL has a lot of potential as a way to increase motivation and facilitate EFL learning, particularly in the area of vocabulary development.

The results of this study highlight the increasing acceptance of game-based learning (GBL) from 2018 to 2023, with an emphasis on experimenting with various combinations to increase its efficacy in the field of EFL acquisition. Various combinations stand out in this context, including virtual and augmented reality technologies, social learning, adaptive learning, mobile learning and simulation-based learning, as evidenced by Alharbi [26], Azizie, and Chew [32], and Su *et al.* [35]. According to authors [36]–[38] a key discovery of this research is the usefulness of game-based learning in enhancing vocabulary acquisition. The study asserts that a range of game-based strategies, including word games, vocabulary tests, gamified flashcards, interactive stories and language learning applications, have the potential to greatly increase engagement and interaction within the vocabulary acquisition process. Several references, including [19], [39]–[42], [44], [48], [49] provide strong support for this claim. These studies have a strong emphasis on vocabulary development, which is a crucial building block of language learning. These findings are completely in line with earlier studies conducted by Vnucko and Klimova [18], who eloquently highlighted the benefits of digital game-based vocabulary learning (DGBVL). Their work, which is thoroughly detailed in reference not only emphasizes enhanced vocabulary retention but also demonstrates how DGBVL can outperform conventional teaching techniques.

In addition, this study offers the idea of DOGBL as a strategy to boost motivation in EFL learning, particularly in the area of vocabulary acquisition, as indicated by references [37], [40]. While Vnucko and Klimova [18] focused on DGBVL, the current study extends this concept to an online and internet-connected context, emphasizing the use of online game-based. This expansion of the concept of game-based learning underscores the adaptability and evolving nature of technology-enhanced language learning approaches. Another relevant previous study mentioned is the one conducted by Pinto *et al.* [19], which explored the effectiveness of virtual reality technology combined with gaming strategies for language learning. While their study focused on virtual reality, it shares similarities with the current investigation in terms of employing systematic literature reviews (SLRs) as the methodological framework and exploring EFL. However, the objectives differ, with Pinto *et al.* [19] aiming to enhance the quality of EFL learning, while the current study seeks to increase students' motivation to learn EFL. Lastly, Acquah and Katz's [1] study also aligns with the current research as it delved into the effectiveness of digital games for second language learning among participants aged 6-18 years old. Both studies use SLRs as their methodology and emphasize the potential of digital games in language learning. However, the focus differs, with the previous study targeting a specific age group, while the current study focuses on learners' proficiency levels in EFL.

3.2. The key features of successful DOGBL interventions in increasing students' motivation in EFL learning

Numerous fundamental characteristics have been identified as imperative for efficacious DOGBL interventions that aim to enhance students' motivation to learn EFL. These characteristics are comprised by the above-included studies: i) Game design: DOGBL interventions necessitate incorporating game design elements that are attractive and captivating to students. These design elements comprise challenges, competitions, instantaneous feedback and incentives; ii) Present opportunities for learners to engage with authentic English use, such as via natural dialogues and realistic scenarios. This enables learners to develop language skills that are pertinent to real-life situations; iii) Personalization: Game-based learning interventions must cater to the individual needs of learners by offering personalized learning pathways, adaptive feedback and adaptive difficulty levels; iv) Social interaction: Social interaction is a crucial aspect of game-based learning interventions. Learners must be able to engage with peers and receive social feedback and support; v) Integration with curriculum: Interventions ought to be integrated with the curriculum to guarantee alignment of learning objectives and achievement of language learning outcomes; and vi) Teacher support: Teachers must receive adequate training and resources to support game-based learning interventions, such as facilitating gameplay and providing feedback to learners. In summary, to effectively motivate students to learn EFL through DOGBL interventions, it is crucial to incorporate engaging game design elements, provide opportunities for authentic language use, personalize the learning experience to individual learners' needs, encourage social interaction, ensure integration with the curriculum and provide support and training for teachers who facilitate the interventions.

The findings are consistent with Dörnyei and Ushioda's [13] self-determination theory (SDT), which offers a useful framework for comprehending the many levels of motivation in language learning. The study's main finding is the significance of game design in DOGBL interventions. The attention and

motivation of students are more likely to be captured by games that include aspects like challenges, competitions, quick feedback and incentives [1]. This is in line with the SDT, which divides motivation into extrinsic and intrinsic levels. These game design components, especially external regulation and introjected regulation, can be viewed in the context of DOGBL as external features that provide regulated motivation. Students are initially driven by external pressures and incentives, but as they play the game, they may partially internalize these drives [13]. The study also highlights the importance of personalization in DOGBL therapies. Their sense of autonomy and intrinsic motivation can be increased by adapting the learning experience to meet their requirements through adaptive feedback and difficulty levels [1]. This is consistent with the idea of autonomous motivation found in SDT when learners participate in an activity for the intrinsic fulfillment it provides rather than for the external benefits [13].

In DOGBL, the importance of social connection is emphasized as a key factor in student motivation. Through social engagement, students can communicate with peers, get social feedback, and help one another learn [1]. This is consistent with the way SDT views the significance of relatedness in motivation. Students' motivation is likely to be higher when they feel linked to their peers and have possibilities for collaboration and social feedback [13]. The study also places a focus on how to incorporate DOGBL treatments into the curriculum. By ensuring that the learning objectives and language learning outcomes are integrated, pupils are given a strong feeling of purpose [1]. This can be connected to defined regulations inside the SDT framework, where learners understand how their behaviors will benefit them in the long run and how what they are learning will help them achieve their objectives [13]. The study also emphasizes the significance of offering instructors the necessary assistance and instruction to facilitate DOGBL interventions successfully. Teachers play a pivotal role in creating a motivating learning environment by using external regulation techniques when necessary [14]. This external regulation can be a valuable tool for teachers to adjust the level of motivation in their students, whether by providing rewards to stimulate interest or by setting challenges to further motivate highly motivated students. All in all, Dörnyei and Ushioda's [13] SDT emphasizes the significance of various factors, including game design, personalization, social interaction, curriculum integration and teacher support, in enhancing students' motivation in EFL learning through DOGBL interventions.

3.3. DOGBL interventions address the needs of students with different levels of English proficiency

DOGBL interventions can cater to the diverse needs of students with different levels of English proficiency in various ways. Firstly, DOGBL interventions can adjust the game's difficulty levels based on the learner's proficiency level, allowing learners to start with easier online games and gradually progress to more challenging ones as they enhance their language skills. Secondly, personalized learning pathways can be provided based on the learner's proficiency level to enable learners to focus on areas where they require more practice and avoid areas where they already possess the necessary skills. Thirdly, differentiated instruction can be offered by presenting various online games or activities that cater to learners with different proficiency levels. Fourthly, DOGBL interventions can offer scaffolded learning by breaking down complex language tasks into smaller, more manageable steps. Lastly, authentic language use opportunities can be provided that are relevant to learners with different proficiency levels, allowing learners to engage in language tasks that are appropriate for their level of proficiency. Thus, these interventions can address the diverse needs of learners by providing adaptive difficulty levels, personalized learning pathways, differentiated instruction, scaffolded learning and authentic language use opportunities, thereby promoting language learning and improving learners' proficiency levels.

Based on the findings above, one key aspect emphasized in the study is the adaptability of DOGBL interventions in adjusting the game's difficulty levels based on learners' proficiency levels [17], [31], [37]. This aligns with the concept of personalized learning pathways within the realm of Gamification. Personalized learning allows learners to progress at their own pace, starting with easier games and gradually advancing to more challenging ones as they enhance their language skills [26]. This approach acknowledges the individualized nature of language acquisition and ensures that learners are neither overwhelmed nor bored, fostering sustained motivation. Furthermore, the provision of personalized learning pathways is another significant feature of DOGBL interventions, catering to learners' specific needs based on their proficiency level [4], [23]. This strategy adheres to the ideas of both GBL and Serious Games, where instructional material is customized to the needs of the learner. This is especially useful for students with different levels of language proficiency since it allows learners to concentrate on the areas where they need more practice while avoiding repetitive activities [26].

The study further emphasizes how crucial differentiated training is in DOGBL treatments [26], [42]. To ensure that all students are suitably challenged and engaged in the learning process, educators can provide a variety of online games or activities that cater to learners with varying competence levels. This strategy is consistent with the GBL concept, according to which games are created to offer a variety of learning experiences that cater to students of different skill levels [26]. As indicated in the study, the idea of

scaffolded learning is essential for breaking down challenging language tasks into smaller, more manageable steps [10], [34]. This is consistent with the tenets of serious games, which emphasize helping learners' knowledge of certain subject matter in an organized manner [26]. In DOGBL, scaffolded learning can lead students from fundamental language abilities to more complex language mastery, ensuring a steady and efficient learning process. The study emphasizes the value of offering genuine language usage opportunities that are pertinent to learners with all competence levels [38], [41], [50]. This is consistent with DOGBL's stated goal of incorporating EFL content into gaming media for educational purposes [26]. The use of authentic language in games enables students to participate in activities that are appropriate for their level of skill, enhancing and enticing the learning process.

4. CONCLUSION

In conclusion, the time between 2018 and 2023 saw a considerable increase in the investigation of game-based learning (GBL), particularly DOGBL, as a cutting-edge strategy to advance EFL instruction. This study looked closely at several pairings and approaches within this field, highlighting their ability to boost students' EFL competency as well as spark an interest in language acquisition. Modern learning techniques including virtual and augmented reality, social learning, adaptive learning, mobile learning and simulation-based learning have broadened the scope of GBL and DOGBL. These combinations, which cover the many facets of EFL instruction and vocabulary learning, have produced encouraging results. The variety of resources offered by DOGBL includes word games, interactive flashcards, intriguing stories and applications for language learning. The dynamic character of technologically enhanced language learning methodologies, which are poised to revolutionize conventional teaching approaches, effortlessly meshes with this evolution.

Additionally, the study made links between its findings and the SDT, highlighting the importance of game design, personalization, social interaction, curricular integration, and teacher support in motivating students. These factors are essential for fostering both intrinsic and extrinsic motivation, which promotes active engagement in DOGBL therapies. Additionally, a distinguishing feature of the efficacy of DOGBL interventions is their adaptability to children with different levels of English proficiency. Every student's unique needs are met thanks to the flexibility of the learning environment, personalized learning routes, differentiated instruction, learning scaffolds, and opportunities for real-world language use. This adaptability reflects the tenets of serious games and gamification, providing learners with specialized learning opportunities that cater to their various skill levels. Overall, a study into game-based learning and DOGBL has produced significant insights on how to improve EFL instruction. These techniques have changed how English vocabulary is learned, but they have also made it possible to study a language in a way that is more interesting, participatory and inspiring. These strategies have the potential to further change EFL instruction as technology develops, offering educators and students great options for the future.

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BIOGRAPHIES OF AUTHORS






Ari Muhammad Syifa    graduated in 2021 with an undergraduate degree from the Department of English Literature, Faculty of Business and Languages, University of Pesantren Tinggi Darul Ulum, Jombang, Indonesia. After graduating, he immediately continued his master's program in linguistics at Airlangga University, Surabaya, Indonesia. In his second semester, he took a teaching specialization. Because of his interest in technology, he wanted to research education using developing technological media. Therefore, he will conduct and cooperate in research in education and technology, especially in language teaching. He can be contacted at email: ari.muhammad.syifa-2022@fib.unair.ac.id



Lilla Musyahda    studied and earned her bachelor's degree in English Language Education from the Institute of Teacher Education and Education Sciences Surabaya in 1992. Achieved her Master's degree majoring in linguistics from the State University of Surabaya in 2003. She completed her doctorate degree in Sociology of Language at the Faculty of Social Science, Airlangga University/Universitas Airlangga. She also completed a short course in Language Testing hosted by Far East University Manila and Lancaster University, United Kingdom. She was the head of the English department from 2010-2015. She also completed Online Program English Network (OPEN) sponsored by the United States Department of State in 2022. Her works and research interests are the study of Applied Linguistics, Language Acquisition and Socio pragmatics. She can be contacted at email: lilla-m@fib.unair.ac.id



David Segoh    is a lecturer at the Department of English Language and Literature, Faculty of Humanities, Airlangga University, Indonesia. He completed his undergraduate degree at that university and then pursued his master's education with a Fulbright scholarship at the University of Delaware, USA, in the field of educational technology. In 2017, he received another Fulbright scholarship, this time with a scheme from DIKTI (also called a DIKTI Fulbright doctoral scholarship), to continue his doctoral studies at Washington State University, in the city of Pullman, USA, and in May 2021 last year he succeeded in obtaining a degree Ph. D. in the field of Language, Literacy, and Technology (LLT). Since a long time, he has been interested in language teaching through technology, especially in the field of online collaborative writing. He can be contacted at email: david-s@fib.unair.ac.id